Summary
Meeting of the California Biodiversity Council
California Water: Today and Tomorrow

Wednesday, July 30, 2003
Cal/EPA Headquarters, Sacramento

Council Members Present:
Mary D. Nichols, California Resources Agency (Co-Chair)
Mike Pool, Bureau of Land Management (Co-Chair)
Art Baggett, Jr., State Water Resources Control Board
Doug Balmain, Mariposa County
Jack A. Blackwell, USDA Forest Service
Michael Aceituno, NOAA Fisheries
Margaret Clark, City of Rosemead
Dale Cox, US Geological Survey
Alexander Glazer, University of California
Jerry Harmon, San Diego Association of Governments
Bob Haussler, California Energy Commission
Robert Hight, California Department of Fish and Game
Luana F. Kiger, USDA Natural Resources Conservation Service
Deborah Maxwell, Western Ecological Research Center, USGS
Bob Meacher, Regional Council of Rural Counties
Frank Michny, US Bureau of Reclamation
Rick Rayburn, California Department of Parks and Recreation
Richard Rodriguez, California Conservation Corps
Dave Solaro, California State Association of Counties
Michael J. Spear, California Department of Water Resources
Paul D. Thayer, California State Lands Commission
Steve Thompson, US Fish and Wildlife Service
Andrea Tuttle, California Department of Forestry and Fire Protection
Colonel Joe Wendel, US Marine Corps
Patrick Wright, California Bay-Delta Authority

Welcome and Introductions
Mike Pool welcomed the group and summarized the agenda for the day.

Council Announcements
Bob Haussler, California Energy Commission, announced a new report addressing cooling water issues for electrical generating plants would be issued next week.

Luree Stetson, California Resources Agency, announced the formation of the California Watershed Council (CWC) under the guidance of CalEPA and the Resources Agency. The goal will be to coordinate state agency services at the watershed scale. The first meeting of the CWC will be August 28 in Sacramento. Luree also announced that the next meeting of the Biodiversity Council (October 23) would focus on watershed coordination.

Report from the Executive Committee
Christine Nota, Executive Committee Chair, reported that:

1) The fall CBC meeting will be October 23 in Sacramento. The Resources Agency (Luree) and CalEPA (Beth Jines) have the lead. A planning meeting will occur for interested CBC and Executive Committee members at the conclusion of today's meeting.

2) Erin Klaesius, CBC Communications Coordinator, will be returning to UC Davis for graduate school in September – a replacement is being sought now.

Special Award
Mary and Mike presented an award to Erin Klaesius for her outstanding service to the CBC. A group picture was taken with Erin. It will be included with her award.

Program: California Water Issues and Challenges
(Moderator: Mike Pool)
Secretary Nichols remarked that there has never been a time when member agencies of the CBC should work together to work through California's challenges with water management. She noted that there will always be issues to debate among government leaders and reminded everyone that the debates make for better resource decisions. However, the current water situation in the state mandates a new spirit of cooperation.

Topic 1: Drought Effects on Vegetation, Fire Protection, and Ecology
Mike Pool introduced this subject by reminding the CBC that the west has been experiencing warming and drying trends for at least two decades. These trends are influencing patterns of vegetation, which in turn are resulting in growing concerns for fire protection and long-term ecological change. He explained that this session will examine the current conditions in the San Bernardino Mountains of southern California which may be a precursor to similar patterns elsewhere.

Precipitation patterns/trends - effects on insects and vegetation
Dave Wood, Emeritus Professor, UC Berkeley
Dr. Wood discussed patterns in insect populations as they relate to climate, with specific emphasis on species that invade tree species that are weakened by drought, ozone, and over crowding. He noted that bark beetles and other wood-boring insects are always present in forests. He explained that drought and insects have played a key role in killing drought-weakened forests in the San Bernardino Mountains and many other areas throughout the western United States. Similar conditions were observed at Lake Tahoe in the early 1990s. Trees damaged by ozone and other factors are also at greater risk to insect attacks. Dr. Wood stated that the San Bernardino Mountains and many other forested areas in the West should have been thinned earlier to avoid the current condition. He projected many other overstocked areas will experience similar conditions without large-scale thinning.

Case Study - the effects of drought on vegetation and fire protection in Southern California Bug-killed forests
Gene Zimmerman, Supervisor, San Bernardino National Forest, and Tom O'Keefe, Chief, San Bernardino Ranger Unit, California Department of Forestry and Fire Protection
Mr. Zimmerman discussed the massive interagency effort that is under way to address fire-protection, public safety, and ecological restoration on 350,000 acres of the San Bernardino Mountains. Over 300,000 acres are on national forest land. Over 100,000 people live in this area so many agencies are concerned about public safety. The coordination effort is being led by the FS and CDF, but also has major involvement of two counties, several other state and federal agencies, and private interests. Two county-level interagency MASTs (mountain area safety teams) have been formed for San Bernardino and Riverside counties. Each has developed a management plan, which guides the work of all the participants. Public safety from wildfires is the current focus for the interagency effort.

Mr. O'Keefe then described current densities of dead and live vegetation and related that to increased potential for extreme fire behavior and related risks to life and property. He also described the very high potential for "plume-dominated" fires that are uncharacteristic in southern California. These fires burn quickly and result in extreme damage to natural resources and property while greatly increasing the risks to public safety.

Mr. Zimmerman then talked about projected impacts to water, watersheds, species and habitats, and other natural resources. He noted that availability of staff and funds, loss of forest products infrastructure, and the short time available to do the work are hampering fuels reduction work.

Mr. O'Keefe then explained that the solid waste stream created from the fuels reduction work has become a tremendous challenge as the volume exceeds capacity for processing by local facilities. Two burn curtains are being permitted to augment waste disposal work. He also described the training and special coordination work that is underway to consolidate work among the fire-protection and law enforcement agencies. He listed some the major lessons learned from this experience which including the adverse effects from long-term fire exclusion, loss of a forest products industry, some local zoning and ordinance deficiencies, and poor property maintenance by many landowners.

Ecological Effects of current trends in So. California Forests
Rich Minnich, Professor, University of California, Riverside
Dr. Minnich discussed the ecological effects of the current forest mortality that has been driven by recent drought in overly dense forests. These conditions exist throughout the western US and northern Mexico. Dr. Minnich showed slides that demonstrated that many forest types could be made resistant to the drought by thinning and maintenance treatments. However, he has observed some areas where widespread tree mortality is being observed from drought effects alone. He argued that more widespread conditions like the San Bernardino Mountain would result without large-scale management interventions.

Key points from his presentation were:

- The rainy season of 2001-02 was the driest ever recorded (since 1849).
- The current forest mortality episode is one of the great ecological disasters during European settlement of southern California (since 1769).
- More trees have died in the last year than the previous 100 years together.
- Forest densification from fire suppression has increased plant use of water.
- Tree mortality increases fire hazard.
- Forest mortality rates correlate with fire history.
- Forest thinning simultaneously mitigates against fire hazard and insects.
- Alternatively, the maintenance of dense forests is not sustainable.
- Such forests will inevitably be destroyed by stand-replacement fires and insects.
- Depending on existing land use, thinning can be accomplished by harvest and planned burns
- Fire and disease resistant stands tend to have large tree densities of roughly 40 stems per acre
- With continuing densification and plant water demand, drought mortality episodes will become increasingly common in California, even with less severe droughts.
- Mitigating against the present disaster, and future ones, will require fundamental rethinking of fire and vegetation management.

Discussion
Mary contrasted the conditions around houses from the national forests nearby. She asked why prescribed fire wasn't used more frequently on the San Bernardino National Forest. Gene answered that a combination of issues were involved. First, thinning was stopped in response to the frequency of appeals of local projects. Moreover, discomfort with burning in overstocked timber stands drove the forest to complete most burning in chaparral areas. Public concern for smoke was not a major factor.

Rick Rayburn asked Dr. Minnich if pre-settlement fire history is a good reference for managers. Dr. Minnich explained that data on fire frequency and intensity has been limited, but is growing. New data suggest that rather intense fires are needed at longer intervals of 40-50 years to maintain the open conditions of pre-settlement times.

Andrea Tuttle asked about the evacuation strategy in place for this summer. Mr. O'Keefe answered that the strategy involves aggressive suppression by suppression agencies and coordinated transportation planning by law enforcement. Public education is also a big effort under way by all of the agencies working with local media and other interests.

Jack Blackwell expressed his appreciation to all the participating agencies for the good work that is being accomplished under very challenging conditions. He also expressed his interest in the findings of Drs. Minnich and Wood. Mr. Blackwell stated his desire for the Forest Service to aggressively reduce vegetation density to avoid these problems elsewhere.

Greg Greenwood offered that the SNEP project was unable to reconstruct the pre-settlement fire history. He offered some other sources of data for understanding this condition.

Larry Ruth asked the panel to offer what they would like to see done to address existing conditions in the San Bernardino Mountains. Mr. Zimmerman suggested that more funding for fuels reduction work would be his highest priority. Mr. O'Keefe offered that more transportation options are needed for evacuation during emergencies. Dr. Wood said he would provide more funding to the policy arena for the development of community-driven fire protection strategies that involve the cutting of green trees. Dr. Minnich identified a need for strong data collection though the treatments and recovery processes as this is an extraordinary "teaching opportunity".

Topic 2: Balancing Water Supply and Biodiversity Considerations

<u>Planning for the Future</u>

California Water Plan Update 2003 and Beyond
Kamyar Guivetchi, State Water Planning Branch, California Department of Water Resources
Mr. Guivetchi presented an overview of the work that is being done at DWR to update the California Water Plan. The Plan will now become the strategic plan for water in the state. As such, it will form the framework for public investments in water resources. A 70-member advisory committee is helping with the development of the Plan. The final plan will be completed in two years and is being closely coordinated with the CalFed Record of Decision. The Plan will contain four volumes as follows:

- **Volume 1 – Strategic Plan**
  - For policy makers & resource managers
- **Volume 2 – Regional Reports**
  - Per SB 672 (Machado)
  - 10 Hydrologic Regions & Mt. Counties
- **Volume 3 – Reference Guide**
  - For broad audience including students
  - Supplemental information
- **Volume 4 – Technical Guide**
  - For technical staff, academia, consultants
  - Documentation for data, methods & tools

The California Water Plan update will provide guidelines for protecting and restoring the environment; preserving agriculture, and protecting public trust values. It will promote integrated regional resource planning and assist Regions with implementing sustainable integrated resource plans through funding and technical assistance. The Plan will also provide guidelines for investing public funds and financing strategies. It will offer plans for filling gaps in data and analytical tools as well as provide performance measures and implementation schedule for implementing adaptive management.

The Federal Water 2025 Initiative
Jeff McCracken, Public Affairs Officer, US Bureau of Reclamation

Mr. McCracken stated that Interior Secretary Norton announced the Water 2025 Initiative two months ago. The initiative focuses on cooperation and coordination as well as guiding how the federal government allocates funds. The goal is to avoid conditions similar to those now being experienced in the Klamath Basin. Six principles, five "realities", and four key tools will guide the program. The six principles stress recognition of state and federal water rights, maintenance of existing water supply infrastructure, enhancing conservation, collaborative approaches, eliminating institutional barriers, and better research. The five realities recognize that human populations are exploding, water shortages exist now, water shortages result in conflicts, aging water facilities limit options, and crisis management is not effective. The four key tools of the program are conservation, efficiency and markets; collaboration, improved technology, and removal of institutional barriers and increased interagency coordination.

State and Federal Cooperation: Lessons Learned

The Bay Delta Experience

Patrick Wright, Director, California Bay-Delta Authority

Mr. Wright provided an overview of the new California Bay-Delta Authority and provided an update of important work by the CalFed Bay Delta Project. He noted that the Bay Delta Authority has no direct authority over agency programs, but it is responsible for helping overall coordination, including the research and monitoring work under the Adaptive Management Program. The Authority will have its first meeting in August. Priorities for the coming year include firming up federal funding and participation, developing an overall financial strategy and a plan for Proposition 50 funds, and developing a report on program accomplishments.

Case Study: The Sacramento River System

Both speakers did this presentation together. They described how a new effort by CalFed would link planning for the North of the Delta Off-Stream Storage (NODOS) Project with biodiversity considerations for the project.

Water Supply Considerations

Gwen Bucholz, Vice-President, CH2M-Hill

Ms. Buchholz described the work that is under way to implement a portion of the CalFed Record of Decision (ROD) which states "Expanding water storage capacity is critical to the successful implementation of all aspects of the CALFED Program...[and] if strategically located, it will provide much needed flexibility in the system to improve water quality and support fish restoration efforts." This project is evaluating the potential for off-stream storage to enhance water management flexibility in the Sacramento Valley, reduce water diversions during critical fish migration periods, increase reliability of supplies for portion of Sacramento Valley, and provide benefits for Delta water quality and other CALFED programs. They are doing that by testing ways to achieve CALFED environmental objectives without and with NODOS.

Biodiversity Considerations

Mike Roberts, The Nature Conservancy

Mr. Roberts discussed how conceptual models are being used to integrate biodiversity considerations into the planning for NODOS. This work is synthesizing existing interdisciplinary information and developing decision analysis tools to evaluate trade-offs among different ecological objectives. The results will be used to propose strategies to achieve multiple species conservation benefits. The work will also provide information on ecological flow needs for CalFed efforts seeking to balance ecosystem and human needs for river flow. Finally, the work will be used to address the following questions:

- Can NODOS increase frequency of high winter flows to establish point bars?
- Can NODOS increase spring flows following high winter flow events to improve vegetation and fisheries conditions?
- Can NODOS stabilize fall flows for fall-run and early winter-run spawning?

- Can NODOS improve water supply?

The next steps for this project will be to:
- Conduct model runs with daily-flow tool and additional CALSIM II runs
- Quantify Ecosystem Flow Regime Needs
- Develop sediment/stage-discharge relationships
- Continue development of Channel Migration and Vegetative Success Relationships
- Determine food web relationships with flow and habitat conditions

Topic 3: Continuing and Emerging Issues and Initiatives

Water Quality and Regulatory Processes
Arthur G. Baggett Jr., Chair, State Water Resources Control Board
Mr. Baggett spoke about the multiple ways that water quality regulation influences on water supply issues in California. The State Water Resources Control Board largely regulates water quality through the federal Clean Water Act. The 303 (d) provisions for maintaining TMDLs in polluted water bodies is resulting in very complicated planning programs to insure compliance. This becoming more complicated where large water transfers (with different compliance standards) are involved. Examples are the water planning efforts for Imperial Valley (selenium), salinity (Salton Sea), Santa Clara River (chloride), and Yuba River (mercury). These are proving more challenging than managing to protect fish species. Comprehensive water quality/supply/water rights planning are now being viewed as the only feasible way of addressing this increasingly complicated condition.

Water Use, Economics, and the Environment
Peter Gleick, President and Founder, The Pacific Institute
Mr. Gleick discussed the relationships of projected water demand to water conservation programs over time. It is generally recognized that water conservation has been in practice for many years. However, water economists are now examining what might be gained by more rigorous conservation. Demand projections are simplistic and may overestimate future demand. The cost of increasing water supply is growing worldwide. Mr. Gleick argued that serious changes in productive uses of water must now be considered. He provided examples where water-use-efficiency is the most cost effective and reliable way of merging water supply with future demands. To do that, the barriers to efficiency must be evaluated on the institutional, economic, and social scales.

Mr. Gleick explained that the revenue produced from water has increased nine-fold in 35 years. He described a project to evaluate potential urban conservation where current use could be reduced today by roughly 35% overall (range 16-74%). That would result in about a million acre feet per year in the commercial/industrial sectors. He estimates that current conservation in the residential sector has resulted in similar use today that was seen in 1980. He also argued that additional conservation could result in a reduction of nearly 50% over current trends – or 3 million acre-feet per year. Agriculture offers even greater opportunities for savings. Finally, Mr. Gleick calculated that wasted water and energy is costing California enormously, but the costs can be recovered through conservation. One source for encouraging conservation will be to price water at costs that are commensurate with the public value of the use.

Global Climate Change
Bob Wilkinson, Professor, Environmental Sciences, UC Santa Barbara
Mr. Wilkinson discussed the national assessment of potential effects of the greenhouse effects on water supply in California. He noted that the National Academy of Sciences has concluded that current scientific information supports the finding that temperatures are rising and global climate change is supportable. Many federal agencies are now cooperating in research on this subject. Surprises are anticipated and cumulative impacts are likely to natural resources, including biodiversity. Changes in precipitation are expected with more rain and less snow runoff.

Desalination Task Force

Dale Hoffman-Floerke, Department of Water Resources

Dale provided a quick overview of the new task force that was formed by AB 2717. The task force was formed to identify potential opportunities and impediments for using ocean and brackish water for human uses. There are 27 members and they are holding their third meeting today in Sausalito. The first phase of the project will identify issues and problems. The second phase will focus on solutions. Key issues that have been identified include permitting and regulations, amount and availability of energy needed for conversion, costs of desalinization, and siting issues for facilities.

Notes by Mike Chapel
August 1, 2003